

D 52769

(Pages : 2)

Name.....

Reg. No.....

FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2018

(CUCBCSS—UG)

Complementary Course (Computer Science)

BCS 1C 01—COMPUTER FUNDAMENTALS

(Common for 2014 and 2017 Admissions)

Time : Three Hours

Maximum 64 Marks

Part A

Answer all questions.

Each question carries 1 mark.

I. Choose the correct answer from the choices given :

1 Which of the following is not an I/O device ?

(a) Printer.

(b) Accumulator.

(c) Plotter.

(d) Trackball.

2 The Base value of hexadecimal system is :

(a) 16.

(b) 8.

(c) 10.

(d) 2.

3 Which of the following is not a logic gate ?

(a) XOR.

(b) XNOR.

(c) NAND.

(d) XAND.

II. Fill in the blanks :

4 The number of bits used to store a BCD digit is 4.

5 input device converts data into machine readable format.

6 ASCII stands for _____.

III. State whether the following statements are True or False :

7 A flowchart will terminate in rhombus symbol. X

8 Control unit of CPU is used to produce interrupts. ✓

9 Parity bit is used for error correction. X

(9 × 1 = 9 marks)

Turn over

Part B

Answer all questions.
Each question carries 2 marks.

10. What are Boolean functions ?
11. How will you convert a hexadecimal number to decimal ?
12. What is the significance of secondary storage devices ?
13. Convert $(731)_8$ to hexadecimal number system. $(1D9)_{16}$
14. What do you mean by magnetic tape ?

(5 × 2 = 10 marks)

Part C

Answer any five questions.
Each question carries 5 marks.

15. Explain binary addition and subtraction with suitable examples.
16. Differentiate NAND and NOR gates.
17. Explain DMA .
18. Draw a flowchart to find the Fibonacci series till term ≤ 1000 .
19. Explain the merits and demerits of Flowcharts.
20. What are pointing devices ? Explain mouse, touch pad and track ball.
21. Briefly explain the components of CPU ?
22. Compute the following :- $(10100101)_2$

(a) $(01101111)_2 + (11011110)_2$

(b) $(10000)_2 - (01010)_2$ $(00110)_2$

(c) $(1100)_2 + (1010)_2$

(d) $(11001)_2 - (101)_2$ $(10100)_2$

$(10110)_2$

(5 × 5 = 25 marks)

Part D

Answer any two questions.
Each question carries 10 marks.

23. State and prove theorems of Boolean Algebra.
24. Discuss how the CPU of a computer works with the help of a block diagram.
25. What are the importance of secondary storage devices ? Explain the features of the following devices :
 - (a) Magnetic tape.
 - (b) Hard disk.
 - (c) CD Drive.

(2 × 10 = 20 marks)

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PART B

10. A *boolean function* is a mathematical function that maps arguments to a value, where the allowable values of range (the function arguments) and domain (the function value) are just one of two values— *true* and *false* (or *0* and *1*). The study of boolean functions is known as *Boolean logic*.
11. Get the decimal equivalent of hex from table.
Multiply every digit with 16 power of digit location. (zero based, 7DE: E location is 0, D location is 1 and the 7 location is 2)
Sum all the multipliers.
12. The function of secondary storage is the long-term retention of data in a computer system. Unlike primary storage, or what we refer to as memory, secondary storage is non-volatile and not cleared when the computer is powered off and back on. Secondary storage is cheaper than primary storage but is also slower in both read and write access. Primary storage is faster but doesn't store data persistently, instead loading data from the slower secondary storage into primary in order to make efficient use of it. Unlike primary storage, secondary storage also doesn't directly access the computer's CPU.
- 13.
14. Magnetic tape is a type of physical storage media for different kinds of data. It is considered an analog solution, in contrast to more recent types of storage media, such as solid state disk (SSD) drives. Magnetic tape has been a major vehicle for audio and binary data storage for several decades, and is still part of data storage for some systems.

PART C

15. Binary Addition

The binary number system uses only two digits 0 and 1 due to which their addition is simple. There are four basic operations for binary addition, as mentioned above.

- 0+0=0
- 0+1=1
- 1+0=1
- 1+1=10

The above first three equations are very identical to the binary digit number. The column by column addition of binary is applied below in details. Let us consider the addition of 11101 and 11011.

$$\begin{array}{r} 11101 \\ 11011 \\ \hline 111000 \end{array}$$

← carry

The above sum is carried out by following step

- 1 + 1 = 10 = 0 with a carry of 1.
- 1+0+1 = 10 = 0 with a carry of 1
- 1+1+0 = 10 = 0 with a carry of 1
- 1+1+1 = 10+1 = 11 = 1 with a carry of 1
- 1 + 1 + 1 = 11

Note carefully that 10 + 1 = 11, which is equivalent to two + one = three (the next binary number after 10)

Thus the required result is 111000.

Binary Subtraction

The subtraction of the binary digit depends on the four basic operations

- $0 - 0 = 0$
- $1 - 0 = 1$
- $1 - 1 = 0$
- $10 - 1 = 1$

The above first three operations are easy to understand as they are identical to decimal subtraction. The fourth operation can be understood with the logic two minus one is one.

For a binary number with two or more digits, the subtraction is carried out column by column as in decimal subtraction. Also, sometimes one has to borrow from the next higher column. Consider the following example.

$$\begin{array}{r}
 0 10 \leftarrow \text{borrow} \\
 1 1 0 \\
 (-) 1 0 1 \\
 \hline
 0 0 1
 \end{array}$$

The above subtraction is carried out through the following steps.

$0 - 0 = 0$

For $0 - 1 = 1$, taking borrow 1 and then $10 - 1 = 1$

For $1 - 0$, since 1 has already been given, it becomes $0 - 0 = 0$

$1 - 1 = 0$

Therefore the result is 0010.

16. The *NAND gate* operates as an AND gate followed by a NOT gate. It acts in the manner of the logical operation "and" followed by negation. The output is "false" if both inputs are "true." Otherwise, the output is "true."



NAND gate

Input 1	Input 2	Output
1	1	0
1	0	1
0	1	1
0	0	1

The *NOR gate* is a combination OR gate followed by an inverter. Its output "true" if both inputs are "false." Otherwise, the output is "false."



NOR gate

Input 1	Input 2	Output
0	0	1
0	1	0
1	0	0
1	1	0

17. Direct memory access (DMA) is a method that allows an input/output (I/O) device to send or receive data directly to or from the main memory, bypassing the CPU to speed up memory operations. The process is managed by a chip known as a DMA controller (DMAC). A computer's system resource tools are used for communication between hardware and software. The four types of system resources are:
I/O addresses

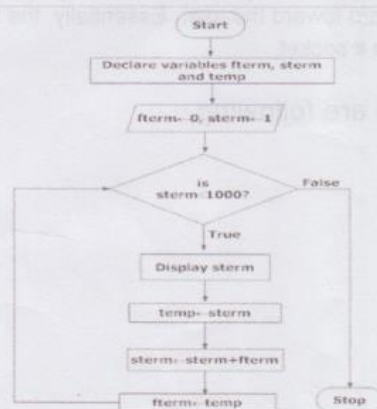
- Memory addresses
- Interrupt request numbers (IRQ)
- Direct memory access (DMA) channels

DMA channels are used to communicate data between the peripheral device and the system memory. All four system resources rely on certain lines on a bus. Some lines on the bus are used for IRQs, some for addresses (the I/O addresses and the memory address) and some for DMA channels.

A DMA channel enables a device to transfer data without exposing the CPU to a work overload. Without the DMA channels, the CPU copies every piece of data using a peripheral bus from the I/O device. Using a peripheral bus occupies the CPU during the read/write process and does not allow other work to be performed until the operation is completed.

With DMA, the CPU can process other tasks while data transfer is being performed. The transfer of data is first initiated by the CPU. During the transfer of data between the DMA channel and I/O device, the CPU performs other tasks. When the data transfer is complete, the CPU receives an interrupt request from the DMA controller.

18.



19. Advantages and Disadvantages of Flowchart

Advantages Of Using FLOWCHARTS:

- **Communication:** Flowcharts are better way of communicating the logic of a system to all concerned or involved.
- **Effective analysis:** With the help of flowchart, problem can be analysed in more effective way therefore reducing cost and wastage of time.
- **Proper documentation:** Program flowcharts serve as a good program documentation, which is needed for various purposes, making things more efficient.
- **Efficient Coding:** The flowcharts act as a guide or blueprint during the systems analysis and program development phase.
- **Proper Debugging:** The flowchart helps in debugging process.
- **Efficient Program Maintenance:** The maintenance of operating program becomes easy with the help of flowchart. It helps the programmer to put efforts more efficiently on that part

Disadvantages Of Using FLOWCHARTS:

- **Complex logic:** Sometimes, the program logic is quite complicated. In that case, flowchart becomes complex and clumsy. This will become a pain for the user, resulting in a waste of time and money trying to correct the problem
- **Alterations and Modifications:** If alterations are required the flowchart may require re-drawing completely. This will usually waste valuable time.
- **Reproduction:** As the flowchart symbols cannot be typed, reproduction of flowchart becomes a problem.

20. An input **device** used to move the pointer (cursor) on screen. The major **pointing device** is the mouse for the desktop **computer** and the touchpad for the laptop, although many road warriors bring along a mouse. **Pointing** sticks are available on some laptops, and a small number of users prefer trackballs over the mouse.

B) Touch pad

A touch pad is a device for pointing (**controlling** input positioning) on a computer display screen. It is an alternative to the mouse. Originally incorporated in laptop computers, touch pads are also being made for use with desktop computers. A touch pad works by sensing the user's finger movement and **downward** pressure

C) Track ball

A trackball is a computer cursor control device used in many notebook and laptop computers. The trackball is usually located in front of the keyboard toward the user. Essentially, the trackball is an upside-down mouse that **rotates** in place within a socket.

21. The three components of the CPU are following,

1. Arithmetic Logic Unit
2. Control Unit
3. Registers

PART D

23. AND Operation

$$0.0 = 0$$

$$0.1 = 0$$

$$1.0 = 0$$

$$1.1 = 1$$

OR Operation

$$0 + 0 = 0$$

$$0 + 1 = 1$$

$$1 + 0 = 1$$

$$1 + 1 = 1$$

Not Operation

$$\bar{1} = 0$$

$$\bar{0} = 1$$

Some basic laws for Boolean Algebra

$\bar{0} = 1, \bar{1} = 0$, if $A = 1$ then $\bar{A} = 0$ and if $A = 0$, then $\bar{A} = 1$.

$A \cdot 0 = 0$ where A can be either 0 or 1.

$A \cdot 1 = A$ where A can be either 0 or 1.

$A \cdot A = A$ where A can be either 0 or 1.

$A \cdot \bar{A} = 0$ where A can be either 0 or 1.

$A + 0 = A$ where A can be either 0 or 1.

$A + 1 = 1$ where A can be either 0 or 1.

$$A + \bar{A} = 1$$

$$A + A = A$$

$A + B = B + A$ where A and B can be either 0 or 1.

$A \cdot B = B \cdot A$ where A and B can be either 0 or 1.

The laws of Boolean algebra are also true for more than two variables like,

Cumulative Law for Boolean Algebra

$$A + B + C = A + C + B = B + A + C = B + C + A = C + A + B = C + B + A$$

$$A \cdot B \cdot C = A \cdot C \cdot B = B \cdot A \cdot C = B \cdot C \cdot A = C \cdot A \cdot B = C \cdot B \cdot A$$

Associative Laws for Boolean Algebra

$$(A + B) + C = A + (B + C)$$

$$(A \cdot B) \cdot C = A \cdot (B \cdot C)$$

Distributive Laws for Boolean Algebra

$$A \cdot (B + C) = A \cdot B + A \cdot C$$

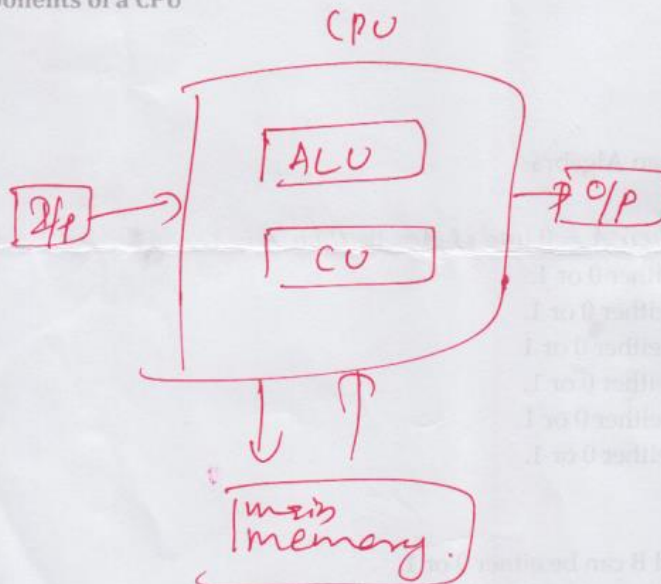
$$A + B \cdot C = (A + B) \cdot (A + C)$$

24 working of cpu

The full form of CPU is **Central Processing Unit**. Alternatively, it is also known by the name of **processor**, **microprocessor** or a **computer processor**. A CPU is an electronics circuit used in a computer that fetches the input instructions or commands from the memory unit, performs arithmetic and logic operations and stores this processed data back to memory.

A CPU or Central Processing Unit is the heart of a computer and is installed in a socket specified on a motherboard. Since a CPU performs a lot of calculations at a high speed, it gets heat up quickly. To cool down the temperature of a CPU a cooling FAN is installed on it.

Components of a CPU



Control Unit

The Control Unit is an internal part of a CPU that co-ordinates the instructions and data flow between CPU and other components of the computer. It is the CU that directs the operations of a central processing unit by sending timing and control signals.

Arithmetic Logic Unit

The ALU is an internal electronic circuitry of a CPU that performs all the arithmetic and logical operations in a computer. The ALU receives three types of inputs.

- Control signal from CU (Control Unit)
- Data(operands) to be operated
- Status information from operations done previously.

When all the instructions have been operated, the output that consists of data is stored in memory and a status information is stored in internal registers of a CPU.

Working of a CPU

All the CPUs regardless of their origin or type performs a basic instruction cycle that consists of three steps named *Fetch, decode and Execute*

Fetch

A program consists of a number of instructions. Various programs are stored in memory. During this step, the CPU reads instruction that is to be operated from a particular address in the memory. The *program counter* of CPU keeps the record of address of the instructions.

Decode

A circuitry called *instruction decoder* decodes all the instructions fetched from the memory. The instructions are decoded to various signals that control other areas of CPU.

Execute

In the last step, the CPU executes the instruction. For example, it stores a value in the particular register and the instruction pointer then points to other instruction that is stored in next address location.

Clock Speed

The speed of processor is measured by the number of clock cycles a CPU can perform in a second. The more the number of clock cycles, the more number of instructions (calculations) it can carry out. The CPU speed is measured in Hertz. Modern Day processors have speed units of GHz. (**1GHz=1 million thousand cycles per second**).

25.

The secondary storage devices can also be told as the **permanent storage device** because the data that are stored inside it are not deleted or erased when the power is switched off. This can also be said that the secondary storage device is the **non volatile memory element**. When ever it is necessary for us we can retrieve the information or the data from the secondary storage device and use it. Even the modifications that are done to the data will also be saved in the **secondary storage device**

advantages

- Secondary storage devices offer several distinct benefits for your computer use, like possessing the capacity to store enormous amounts of information such as hundreds, even the equivalent of thousands, of books. Secondary storage
- also removes the once-enormous costs to businesses that were incurred for storage of important documents in filing cabinets or storage facilities. In addition, secondary storage devices are safe, reliable and permanent, according to the website University of Rhode Island.

Magnetic tape

Magnetic tapes are used in a variety of ways. There are many different features, including audio and data uses. More commonly, magnetic tapes are used in cassette and VHS tapes. They are formed by creating a plastic base coated with a substance containing iron oxide. Magnetic tapes can also degrade over time, which can damage the audio and visual images as well as leave a residue on machine equipment.

Audio Storage

Magnetic tape can store audio. Most commonly, audio is stored on magnetic tape in the form of cassette tapes.

Data Storage

Magnetic tape can store data, such as moving images, in the form of VHS tapes

Hard disk

The hard disk is a type of magnetic disk. It is also called a fixed disk because it is fixed in the system unit. A hard disk consists of several circular disks called platters sealed inside a container. The container contains a motor to rotate the disk. It also contains an access arm and read and write head to read and write data to the disk. The platters are used to store the data. A platter in a hard disk is coated with magnetic material.

Reference: Continue reading at <https://t4tutorials.com/hard-disk-components-characteristics-performance-and-hard-disk-controllers/>

Characteristics of Hard Disk Some important characteristics of the hard disk are as follows: The hard disk provides large storage capacity. The capacity of a personal computer hard disk is from 160 GB to 2TB and more. It is much faster than the floppy disk. It is the primary media for storing data and programs. It is more reliable than a floppy disk. Data stored on the hard disk is safer than the floppy disk.

Reference: Continue reading at <https://t4tutorials.com/hard-disk-components-characteristics-performance-and-hard-disk-controllers/>

." A CD-ROM

Stands for "Compact Disc Read-Only Memory." A CD-ROM is a CD that can be read by a computer with an optical drive. The "ROM" part of the term means the data on the disc is "read-only," or cannot be altered or erased. Because of this feature and their large capacity, CD-ROMs are a great media format for retail software. The first CD-ROMs could hold about 600 MB of data, but now they can hold up to 700 MB. CD-ROMs share the same technology as audio CDs, but they are formatted differently, allowing them to store many types of data.

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Name.....

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FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2018

(CUCBCSS—UG)

Core Course (Computer Science)

BCS 1B 01—COMPUTER FUNDAMENTALS AND HTML

(2017 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part A (Short Answer Questions)

Answer all questions.

Each question carries 1 mark.

1. What is an adapter ?
2. What are the base values for decimal, hexadecimal, octal and binary number systems ?
3. Write 4-bit BCD code for 1024_{10} .
4. What is a program planning tool ?
5. List any four output devices.
6. What is positional number system ?
7. Write the full form of ASCII.
8. What is a register ?
9. What do you mean by XHTML ?
10. Name the different types of lists used in HTML.

(10 × 1 = 10 marks)

Part B (Short Paragraph Questions)

Answer all questions.

Each question carries 3 marks.

11. Differentiate hardware and software.
12. Subtract 110111_2 from 101110_2 using complementary method.
13. What is a Web Browser ?
14. Explain the table tag and its attributes.
15. Distinguish between RAM and ROM.

(5 × 3 = 15 marks)

Turn over

Part C (Short Essay Questions)

Answer any five questions.
Each question carries 5 marks.

16. What is an input interface? How it differs from output interface?
17. Discuss the advanced features of Web Browser.
18. Convert 168.75_{10} to binary, Octal, Hexadecimal number systems.
19. What is a flowchart? Draw the basic symbols and describe their functions.
20. Explain the following HTML tags with syntax and example.
 - (a) List tags.
 - (b) Frameset tag.
 - (c) Text Formatting tags.
21. Explain the merits and demerits of Flowcharts.
22. Give the dual of the route $A + \bar{A}.B = A + B$.
23. Explain the attributes of frame and iframe tags.

(5 × 5 = 25 marks)

Part D (Essay Questions)

Answer any three questions.
Each question carries 10 marks.

24. Write the algorithm and draw the flowchart to find the smallest number.
25. Draw a block diagram to illustrate the basic organization of a computer and explain the functions of various units.
26. Explain the functionalities of the following :
 - (a) Motherboard.
 - (b) SMPS.
 - (c) Add-on-cards.
 - (d) Cache memory.
27. Explain any three different input and output devices in detail.
28. Write a HTML program to create an application form to open a bank account.

(3 × 10 = 30 marks)

94	59
3-1	1-0
24-2	15-1 1/2
15-2	15-1 1/2
13-1/2	22-0
11-1/2	12-0
1-0	19-3/2
2-0	24-2
4-0	27-0
5-1/2	26-1/2
7-0	
8-1/2	
10-1	

1 Semester Bsc. Degree Examination, Nov 2018.

BCS 1B01 - 52731

PART A

1. An adapter is a physical device that allows one hardware or electronic interface to be adapted (accommodated without loss of function) to another hardware or electronic interface. In a computer, an adapter is often built into a card that can be inserted into a slot on the computer's motherboard. The card adapts information that is exchanged between the computer's microprocessor and the devices that the card supports.

2. 10,16,8,2

3. 0001 0000 0010 0100

4. A programming tool or software development tool is a computer program that software developers use to create, debug, maintain, or otherwise support other programs and applications.

5. Monitor, printer, plotter, speaker

6. A positional (numeral) system is a system for representation of numbers by an ordered set of numeral symbols (called digits) in which the value of a numeral symbol depends on its position. For each position a unique symbol or a limited set of symbols is used.

7. American Standard Code for Information Interchange

8. A processor register (CPU register) is one of a small set of data holding places that are part of the computer processor. A register may hold an instruction, a storage address, or any kind of data (such as a bit sequence or individual characters).

9. eXtensible HyperText Markup Language (XHTML) is part of the family of XML markup languages. It mirrors or extends versions of the widely used HyperText Markup Language (HTML), the language in which Web pages are formulated.

10. a) unordered list — used to group a set of related items in no particular order.

b) Ordered list — used to group a set of related items in a specific order.

c) Description list — used to display name/value pairs such as terms and definitions.

PART B

11. **Hardware:** Physical parts of the computer are called hardware. You can touch, see and feel hardware. Hardware is constructed using physical materials or components.

Software: A set of instructions given to the computer is called software. You cannot touch and feel software. Software is developed by writing instructions in programming language.

12. step 1: 2's complement of 110111 = 001001

Ans: 110111.

1, 001001

13. A web browser is a software program that allows a user to locate, access, and display web pages

14. The <table> tag defines an HTML table. An HTML table consists of the <table> element and one or more <tr>, <th>, and <td> elements. *Height, width, border, background-color, rowspan, colspan*

15. RAM is Random Access Memory, while ROM stands for Read Only Memory

2. RAM is volatile and is erased when the computer is switched off. ROM is non-volatile and generally cannot be written to.

3. RAM is used for both read and write while ROM is used only for reading.

PART C

16. Through input devices, Input interface transforms the input data and instructions fed to a computer into binary codes that are acceptable to a computer. Whereas in output interfaces, the information obtained from data processing is transformed into human acceptable form from a binary form.

17. Navigation buttons, Refresh button, Stop button, Home button, Web browser's address bar, Integrated search, Tabbed browsing, Bookmark buttons.

18. binary : 10101000.11

Octal : 250.6

Hexadecimal : A8.C

19. Flowcharts use special shapes to represent different types of actions or steps in a process. Lines and arrows show the sequence of the steps, and the relationships among them. These are known as flowchart symbols.

Common Flowchart Symbols : Rectangle Shape - Represents a process Oval or Pill Shape - Represents the start or end Diamond Shape - Represents a decision Parallelogram - Represents input/output

20 a) , , , <dl>, <dt>, <dd>

b) <frameset cols="25%,*,25%">
<frame src="frame a.htm">

c) - Bold text <i> - Italic text - Emphasized text <mark> - Marked text <small> - Small text

21. Advantages Of Using FLOWCHARTS: Communication, Effective analysis, Proper documentation, Efficient Coding, Proper Debugging, Efficient Program Maintenance

Disadvantages Of Using FLOWCHARTS: Complex logic, Alterations and Modifications, Reproduction

22. $A \cdot (\bar{A} + B) = A \cdot B$

23. The <frame> tag defines one particular window (frame) within a <frameset>. Each <frame> in a <frameset> can have different attributes, such as border, scrolling, the ability to resize, etc.

```
<frameset cols="25%,50%,25%">  
<frame src="frame_a.htm">
```

An inline frame is used to embed another document within the current HTML document. <iframe src="https://www.w3schools.com"></iframe>

PART D

24. step 1 : START

Step 1 → Take an array A and define its values

Step 2 → Declare smallest as integer

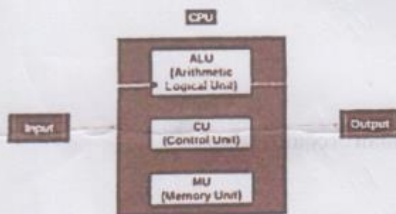
Step 3 → Set smallest to 0

Step 4 → Loop for each value of A

Step 5 → If $A[n] < \text{smallest}$, Assign $A[n]$ to smallest

Step 6 → After loop finishes, Display smallest as smallest element of array

STOP



25.

26. A motherboard is one of the most essential parts of a computer system. It holds together many of the crucial components of a computer, including the central processing unit (CPU), memory and connectors for input and output devices. The base of a motherboard consists of a very firm sheet of non-conductive material, typically some sort of rigid plastic. Thin layers of copper or aluminum foil, referred to as *traces*, are printed onto this sheet. These traces are very narrow and form the circuits between the various components. In addition to circuits, a motherboard contains a number of sockets and slots to connect the other components.

- switched-mode power supply, SMPS** is a power supply that uses a switching regulator to control and stabilize the output voltage by switching the load current on and off. These power supplies offer a greater power conversion and reduce the overall power loss.
- Add-on-card** An **add on card** is an electronic card/board that is used to add extra functionality to a computer. It is inserted into an **expansion slot** on the motherboard of a computer. ...

Vysakh
Adarsh
Ajay
Abhinav

- c. The *Cache Memory* (Pronounced as "cash") is the volatile computer memory which is very nearest to the CPU so also called **CPU memory**, all the Recent Instructions are Stored into the Cache Memory. It is the fastest memory that provides high-speed data access to a computer microprocessor. Cache meaning is that it is used for storing the input which is given by the user and which is necessary for the computer microprocessor to Perform a Task. But the Capacity of the Cache Memory is too low in compare to Memory (random access memory (RAM)) and Hard Disk.

27. Input : Keyboard , Mouse, Scanner

Output : Plotters, Monitor ,Printers

28. <form action="action_page.php">

<div class="container">

<h1>Register</h1>

<p>Please fill in this form to create an account.</p>

<hr>

<label for="email">Email</label>

<input type="text" placeholder="Enter Email" name="email" required>

<label for="psw">Password</label>

<input type="password" placeholder="Enter Password" name="psw" required>

<label for="psw-repeat">Repeat Password</label>

<input type="password" placeholder="Repeat Password" name="psw-repeat" required>

<hr>

<p>By creating an account you agree to our Terms & Privacy.</p>

<button type="submit" class="registerbtn">Register</button>

</div>

<div class="container signin">

<p>Already have an account? Sign in.</p>

</div>

</form>

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FIRST SEMESTER B.C.A. DEGREE EXAMINATION, NOVEMBER 2018

(CUCBCSS-UG)

Core Course

BCA 1B 01—COMPUTER FUNDAMENTALS AND HTML

(2017 Admissions)

Time : Three Hours

Maximum : 80 Marks

Section A

Answer all the questions.
Each question carries 1 mark.

1. What is a language translator ?
2. Provide the significance of Cache Memory.
3. Obtain the octal Equivalent of the Decimal 734.24.
4. What is Postulates ? Explain.
5. What is top-down design ? Explain with example.
6. What is DNS ? Explain.
7. Define HTML. Explain its use.
8. Explain internal anchor tag.
9. Explain spanning in HTML tables.
10. What is Internal CSS ? Explain.

(10 × 1 = 10 marks)

Section B

Answer all the questions.
Each question carries 2 marks.

11. Explain how register works. What is its use ?
12. Explain minterms and maxterm.
13. With example, explain rules and laws of Boolean algebra.
14. Draw flowchart for find whether the given number is prime or not.
15. Explain different steps in web hosting.
16. Explain unordered lists in HTML.
17. How check box different from radio button ? Explain.
18. Explain the use of class attribute in CSS with an example.

(8 × 2 = 16 marks)

Turn over

Section C

Answer any six questions.
Each question carries 4 marks.

19. Explain Ports, Adapters and network cables with their functions.
20. Explain different features of good language.
21. (a) What is 1's complement ? Explain with example.
(b) Explain Unicode, gray code and excess code with example.
22. How will you convert octal number to the decimal form ? Explain steps with suitable example.
23. What is an algorithm ? Write an algorithm to find sum and average of positive numbers from a list of numbers.
24. Explain in detail the DHTML and HTTP.
25. Explain how block elements and objects working with CSS ?
26. Why we use anchor Tags ? Explain different anchors tags used in HTML 5 with example.
27. Design web pages to accept the employee information. Employee should enter the details like name, emp ID, city up to 20 characters, address up to 30 characters, and designation up to 20 characters. Show the combo box to select the qualification, option button for gender selection. Display the information accepted in a formatted form.

(6 × 4 = 24 marks)

Section D

Answer any three questions.
Each question carries 10 marks.

28. What is Von Neumann model ? Explain different parts of this model in detail.
29. (a) What is Karnaugh Map ? What are the different steps to solve expression using K-map ? Explain with examples.
(b) Solve the K-map for 4 variables in SOP FORM
$$F(P, Q, R, S) = \Sigma (0, 2, 5, 7, 8, 10, 13, 15).$$
30. Describe different formatting tags, lists and media tags in HTML 5.
31. What is the basic concept of CSS ? Explain CSS properties, styling and ID.
32. Write short note on :
 - (a) DHTML, XHTML and W3C.
 - (b) Motherboard and SMPS.
 - (c) Explain different Laws of Boolean Algebra.

(3 × 10 = 30 marks)

52733

PART-A

1. **Language translator** is a program which is used to translate instructions that are written in the source code to object code i.e. from high-level **language** or assembly **language** into machine **language**.

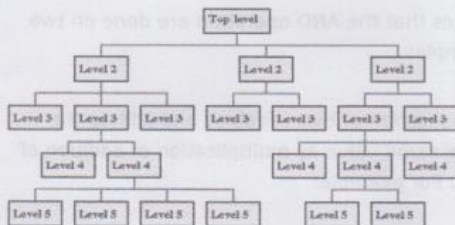
2. It acts as a high speed buffer between CPU and main **memory** and is used to temporary store very active data and action during processing since the **cache memory** is faster than main **memory**, the processing speed is increased by making the data and instructions needed in current processing available in **cache**.

3. ~~476.3125~~ 1336.1727

4. Postulates

(1)	$A + 0 = A$	$A \cdot 1 = A$	identity
(2)	$A + \text{NOT}[A] = 1$	$A \cdot \text{NOT}[A] = 0$	complement
(3)	$A + B = B + A$	$A \cdot B = B \cdot A$	commutative law
(4)	$A + (B + C) = (A + B) + C$	$A \cdot (B \cdot C) = (A \cdot B) \cdot C$	associative law
(5)	$A + (B \cdot C) = (A + B) \cdot (A + C)$	$A \cdot (B + C) = (A \cdot B) + (A \cdot C)$	distributive law

5. A **top-down** approach (also known as **stepwise design**) is essentially the **breaking down** of a system to gain insight into the sub-systems that make it up. In a **top-down** approach an overview of the system is formulated, specifying but not detailing any first-level subsystems.



6. **DNS** – Domain Name System is an amazing technology. It helps us open internet addresses without a hustle. ... **DNS** is an essential part of the Internet. It manages to translate all the inquiries into IP addresses, and like this, it can identify different devices that are connected to the network.

7. **Short** for HyperTextMarkup Language, the authoring language used to create documents on the World Wide Web. **HTML** is similar to SGML, although it is not a strict subset. **HTML** defines the structure and layout of a Web document by using a variety of tags and attributes'

8. HTML internal link name is followed by hash sign(#). HTML <a> tag is used for anchor point name, which is referred to as an internal link into the same page.

9. The HTML tag is used for grouping and applying styles to inline elements. There is a difference between the span tag and the div tag. The span tag is used with inline elements whilst the div tag is used with block-level content.

rowspan f
colspan f

10. Internal CSS code is put in the <head> section of a particular page. The classes and IDs can be used to refer to the CSS code, but they are only active on that particular page. CSS styles embedded this way are downloaded each time the page loads so it may increase loading speed.

PART-B

11. A register is a temporary storage area built into a CPU. The instruction register fetches instructions from the program counter (PC) and holds each instruction as it is executed by the processor. The memory registers are used to pass data from memory to the processor.

12. A minterm is a product (AND) of all variables in the function, in direct or complemented form. A minterm has the property that it is equal to 1 on exactly one row of the truth table. A maxterm is a sum (OR) of all the variables in the function, in direct or complemented form.

13. The basic Laws of Boolean Algebra can be stated as follows:

- o Commutative Law states that the interchanging of the order of operands in a Boolean equation does not change its result. For example:
 1. OR operator $\rightarrow A + B = B + A$
 2. AND operator $\rightarrow A * B = B * A$
- o Associative Law of multiplication states that the AND operation are done on two or more than two variables. For example:
$$A * (B * C) = (A * B) * C$$
- o Distributive Law states that the multiplication of two variables and adding the result with a variable will result in the same value as multiplication of addition of the variable with individual variables. For example:
$$A + BC = (A + B)(A + C).$$
- o Annulment law:
$$A * 0 = 0$$
$$A + 1 = 1$$
- o Identity law:
$$A * 1 = A$$
$$A + 0 = A$$
- o Idempotent law:
$$A + A = A$$
$$A * A = A$$

- o Complement law:

$$A + A' = 1$$

$$A.A' = 0$$

- o Double negation law:

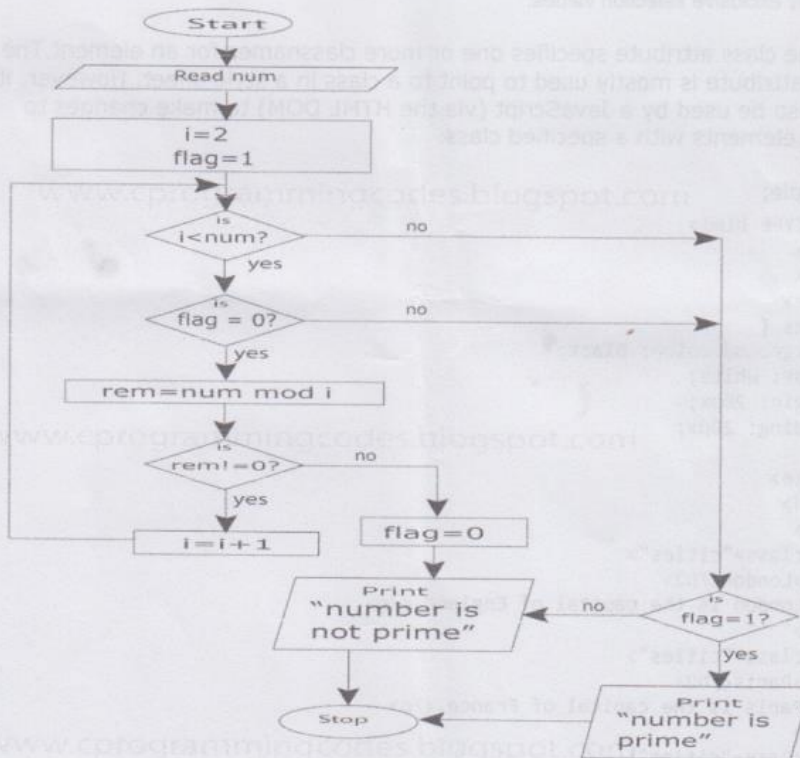
$$((A)')' = A$$

- o Absorption law:

$$A.(A+B) = A$$

$$A + AB = A$$

14



15. Step 1: Decide What Type of Website You Want. You will typically find 2 types of websites:

Step 2: Choose Your Hosting Server. ...

Step 3: Select Your Web Hosting Plan. ...

Step 4: Change Your DNS Address. ...

Step 5: Upload Your Website

16. An unordered list created using the `` tag, and each list item starts with the `` tag. The list items in unordered lists are marked with bullets (small black circles), by default. ``

```
<li>Chocolate Cake</li><li>Black Forest Cake</li>
<li>Pineapple Cake</li></ul>
```

17. There is a fundamental **difference** between them. In a **checkbox group**, a user can select more than one option. Each **checkbox** operates individually, so a user can toggle each response "on" and "off." **Radio buttons**, however, operate as a **group** and provide mutually exclusive selection values.

18. The class attribute specifies one or more classnames for an element. The class attribute is mostly used to point to a class in a style sheet. However, it can also be used by a JavaScript (via the HTML DOM) to make changes to HTML elements with a specified class.

Example;

```
<!DOCTYPE html>
<html>
<head>
<style>
.cities {
  background-color: black;
  color: white;
  margin: 20px;
  padding: 20px;
}
</style>
</head>
<body>
<div class="cities">
  <h2>London</h2>
  <p>London is the capital of England.</p>
</div>
<div class="cities">
  <h2>Paris</h2>
  <p>Paris is the capital of France.</p>
</div>
<div class="cities">
  <h2>Tokyo</h2>
  <p>Tokyo is the capital of Japan.</p>
</div>
</body>
</html>
```

Part c

19. Networking cables are networking hardware used to connect one network device to other network devices or to connect two or more computers to share printers, scanners etc. Different types of network cables, such as coaxial cable, optical fiber cable, and twisted pair cables, are used depending on the network's physical layer, topology, and size. The devices can be separated by a few meters (e.g. via Ethernet) or nearly unlimited distances (e.g. via the interconnections of the Internet).

There are several technologies used for network connections. Patch cables are used for short distances in offices and wiring closets. Electrical connections using twisted pair or coaxial cable are used within a building. Optical fiber cable is used for long distances or for applications requiring high bandwidth or electrical isolation. Many installations use structured cabling practices to improve reliability and maintainability. In some home and industrial applications power lines are used as network cabling.

A **port** is an entry point, provided by the core logic. It defines a set of functions.

Primary ports are the main API of the application. They are *called by* the primary adapters that form the user side of the application. Examples of primary ports are functions that allow you to change objects, attributes, and relations in the core logic.

Secondary ports are the interfaces for the secondary adapters. They are *called by* the core logic. An example of a secondary port is an interface to store single objects. This interface simply specifies that an object be created, retrieved, updated, and deleted. It tells you nothing about the way the object is stored.

An **adapter** is a bridge between the application and the service that is needed by the application. It fits a specific port.

A **primary adapter** is a piece of code between the user and the core logic. One adapter could be a unit test function for the core logic. Another could be a controller-like function that interacts both with the graphical user interface and the core logic. The primary adapter calls the API functions of the core logic.

A **secondary adapter** is an implementation of the secondary port (which is an interface). For instance, it can be a small class that converts application storage requests to a given database, and return the results of the database in a format requested by the secondary port. It can also be a mock database object needed to unit tests certain parts of the core logic. The core logic calls the functions of the secondary adapter.

20. a) Naturalness:

A good language should be natural for the application area for which it is designed. That is, it should provide appropriate operators, data structures, control structures and a natural syntax to facilitate programmers to code their problems easily and efficiently. FORTRAN and COBOL are good examples of languages possessing high degree of naturalness in scientific and business application areas, respectively.

b) Abstraction:

Abstraction means ability to define and then use complicated structures or operations in ways that allow many of the details to be ignored. The degree of abstraction allowed by a language directly affects its ease of programming. For Example, object-oriented languages support high degree of abstraction. Hence, writing programs in object-oriented languages is much easier. Object-oriented also support re usability of program segments due to this feature.

c) Efficiency:

Programs written in a good language are translated into machine code efficiently, are executed and require relatively less space in memory. That is, a good programming language is supported with a good language translator (a compiler or an interpreter) that gives due consideration to space and time efficiency.

d) Structured Programming Support:

A good language should have necessary features to allow programmers to write their programs based on the concepts of structured programming. This property greatly affects the ease with which a program may be written, tested and maintained. More over, it forces a programmer to look at a problem in a logical way so that fewer errors are created while writing a program for the problem.

e) Compactness:

In a good language, programmers should be able to express the intended operations concisely without losing readability. Programmers generally do not like a verbose language because they need to write too much. Many programmers dislike COBOL, because it is verbose in nature (Lacks Compactness)

f) Locality:

A good language should be such that while writing a program, a programmer need not jump around the visually as the text of a program is prepared. This allows the programmer to concentrate almost solely on the part of the program around the statement currently being worked with. COBOL and to some extent C and Pascal lack locality because data definitions are separated from processing statements, perhaps by many pages of code, or have to appear before any processing statement in the function/procedure.

g) Extensibility:

A good language should also allow extensions through a simply, natural and elegant mechanism. Almost all languages provide subprogram definition mechanisms for the purpose, but some languages are weak in this aspect.

h) Suitability to its Environment:

Depending upon the type of application for which a programming language has been designed, the language must also be made suitable to its environment. For Example, a language designed for a real-time applications must be interactive in nature. On the other

hand, languages used for data-processing jobs like payroll, stores accounting etc may be designed to operate in batch mode.

21. a) The **ones' complement** of a **binary number** is defined as the value obtained by inverting all the bits in the binary representation of the number (swapping 0s for 1s and vice versa). The ones' complement of the number then behaves like the negative of the original number in some arithmetic operations. To within a constant (of -1), the ones' complement behaves like the negative of the original number with **binary addition**. However, unlike **two's complement**, these numbers have not seen widespread use because of issues such as the offset of -1 , that negating zero results in a distinct **negative zero** bit pattern, less simplicity with arithmetic **borrowing**, etc

b) **Unicode** is a computing industry standard for the consistent **encoding**, representation, and handling of **text** expressed in most of the world's **writing systems**. The standard is maintained by the **Unicode Consortium**, and as of May 2019 the most recent version, **Unicode 12.1**, contains a repertoire of 137,994 **characters** covering 150 modern and historic **scripts**, as well as multiple symbol sets and **emoji**. The character repertoire of the Unicode Standard is synchronized with **ISO/IEC 10646**, and both are code-for-code identical.

The **reflected binary code (RBC)**, also known just as **reflected binary (RB)** or **Gray code** after **Frank Gray**, is an ordering of the **binary numeral system** such that two successive values differ in only one **bit** (binary digit). The reflected binary code was originally designed to prevent spurious output from **electromechanical switches**. Today, Gray codes are widely used to facilitate **error correction** in digital communications such as **digital terrestrial television** and some **cable TV** systems.

Excess-3^(BCD) is a self-complementary **binary-coded decimal (BCD)** code and **numeral system**. It is a **biased representation**. Excess-3 code was used on some older computers as well as in cash registers and hand-held portable electronic calculators of the 1970s, among other uses.

22. Octal to Decimal

Converting octal to decimal can be done with repeated division.

1. Start the decimal result at 0.
2. Remove the most significant octal digit (leftmost) and add it to the result.
3. If all octal digits have been removed, you're done. Stop.
4. Otherwise, multiply the result by 8.
5. Go to step 2.

23. algorithm

An algorithm (pronounced AL-go-rith-um) is a procedure or formula for solving a problem, based on conducting a sequence of specified actions. A computer program can be viewed as an elaborate algorithm. In mathematics and computer science, an algorithm usually means a small procedure that solves a recurrent problem.

Algorithms are widely used throughout all areas of IT (information technology).

A search engine algorithm, for example, takes search strings of keywords and operators as input, searches its associated database for relevant web pages, and returns results.

An encryption algorithm transforms data according to specified actions to protect it. A secret key algorithm such as the U.S. Department of Defense's Data Encryption Standard (DES), for example, uses the same key to encrypt and decrypt data. As long as the algorithm is sufficiently sophisticated, no one lacking the key can decrypt the data.

The word algorithm derives from the name of the mathematician, Mohammed ibn-Musa al-Khwarizmi, who was part of the royal court in Baghdad and who lived from about 780 to 850. Al-Khwarizmi's work is the likely source for the word *algebra* as well.

24. **Dynamic HTML**, or **DHTML**, is an umbrella term for a collection of technologies used together to create interactive and animated websites^[1] by using a combination of a static markup language (such as HTML), a client-side scripting language (such as JavaScript), a presentation definition language (such as CSS), and the Document Object Model (DOM).^[2] The application of DHTML was introduced by Microsoft with the release of Internet Explorer 4 in 1997.

DHTML allows scripting languages to change variables in a web page's definition language, which in turn affects the look and function of otherwise "static" HTML page content, after the page has been fully loaded and during the viewing process. Thus the dynamic characteristic of DHTML is the way it functions while a page is viewed, not in its ability to generate a unique page with each page load.

The **Hypertext Transfer Protocol (HTTP)** is an application protocol for distributed, collaborative, hypermedia information systems.^[1] HTTP is the foundation of data communication for the World Wide Web, where hypertext documents include hyperlinks to other resources that the user can easily access, for example by a mouse click or by tapping the screen in a web browser. HTTP was developed to facilitate hypertext and the World Wide Web.

25. Block Elements

Block elements appear on the screen as if they have a line break before and after them. For example, the `<p>`, `<h1>`, `<h2>`, `<h3>`, `<h4>`, `<h5>`, `<h6>`, ``, ``, `<dl>`, `<pre>`, `<hr />`, `<blockquote>`, and `<address>` elements are all block level elements. They all start on their own new line, and anything that follows them appears on its own new line.

26. The anchor element is used to create hyperlinks between a *source anchor* and a *destination anchor*. The source is the text, image, or button that links to another resource and the destination is the resource that the source anchor links to.

Hyperlinks are one of the fundamental technologies that make the web the information superhighway, and understanding how to use anchor elements is one of the first things you need to master when learning HTML.

27. sample code

```
<form action="//submit.form" id="EmploymentApplication100" method="post"
onsubmit="return ValidateForm(this);">
<script type="text/javascript">
function ValidateForm(frm) {
if (frm.First_Name.value == "") { alert('First name is required. ');
frm.First_Name.focus(); return false; }
if (frm.Last_Name.value == "") { alert('Last name is required. ');
frm.Last_Name.focus(); return false; }
if (frm.Email_Address.value == "") { alert('Email address is required. ');
frm.Email_Address.focus(); return false; }
if (frm.Email_Address.value.indexOf("@") < 1 ||
frm.Email_Address.value.indexOf(".") < 1) { alert('Please enter a valid email
address. '); frm.Email_Address.focus(); return false; }
if (frm.Position.value == "") { alert('Position is required. '); frm.Position.focus();
return false; }
if (frm.Phone.value == "") { alert('Phone is required. '); frm.Phone.focus(); return
false; }
return true; }
</script>
<table border="0" cellpadding="5" cellspacing="0">
<tr><td style="width: 50%">
```

```

<label for="First_Name"><b>First name *</b></label><br />
<input name="First_Name" type="text" maxlength="50" style="width: 260px" />
</td> <td style="width: 50%">
<label for="Last_Name"><b>Last name *</b></label><br />
<input name="Last_Name" type="text" maxlength="50" style="width: 260px" />
</td> </tr> <tr> <td colspan="2">
<label for="Email_Address"><b>Email *</b></label><br />
<input name="Email_Address" type="text" maxlength="100" style="width:
535px" />
</td> </tr> <tr> <td colspan="2">
<label for="Portfolio"><b>Portfolio website</b></label><br />
<input name="Portfolio" type="text" maxlength="255" value="http://"
style="width: 535px" />
</td> </tr> <tr> <td colspan="2">
<label for="Position"><b>Position you are applying for *</b></label><br />
<input name="Position" type="text" maxlength="100" style="width: 535px" />
</td> </tr> <tr> <td>
<label for="Salary"><b>Salary requirements</b></label><br /> <input
name="Salary" type="text" maxlength="50" style="width: 260px" /> </td> <td>
<label for="StartDate"><b>When can you start?</b></label><br />
<input name="StartDate" type="text" maxlength="50" style="width: 260px" />
</td> </tr> <tr> <td>
<label for="Phone"><b>Phone *</b></label><br />
<input name="Phone" type="text" maxlength="50" style="width: 260px" />
</td> <td>
<label for="Fax"><b>Fax</b></label><br />
<input name="Fax" type="text" maxlength="50" style="width: 260px" />
</td> </tr> <tr> <td colspan="2">
<label for="Relocate"><b>Are you willing to relocate?</b></label><br />
<input name="Relocate" type="radio" value="Yes" checked="checked" /> Yes
<input name="Relocate" type="radio" value="No" /> No
<input name="Relocate" type="radio" value="NotSure" /> Not sure
</td> </tr> <tr> <td colspan="2">
<label for="Organization"><b>Last company you worked for</b></label><br />
<input name="Organization" type="text" maxlength="100" style="width: 535px"
/>
</td> </tr> <tr> <td colspan="2">
<label for="Reference"><b>Reference / Comments / Questions</b></label><br />
<textarea name="Reference" rows="7" cols="40" style="width:
535px"></textarea>
</td> </tr> <tr> <td colspan="2" style="text-align: center;">
<div style="float: right"> <a href="https://www.100forms.com" id="lnk100"

```

```
title="form to email">form to email</a></div>
<script
src="https://www.100forms.com/js/FORMKEY:EE855HJRHUFP/SEND:my@email.c
om" type="text/javascript"></script>
<input name="skip_submit" type="submit" value="Send Application" />
</td> </tr>
</table>
</form>
```

Section D

28. Von-Neumann Model

Von-Neumann proposed his computer architecture design in 1945 which was later known as Von-Neumann Architecture. It consisted of a Control Unit, Arithmetic, and Logical Memory Unit (ALU), Registers and Inputs/Outputs.

Von Neumann architecture is based on the stored-program computer concept, where instruction data and program data are stored in the same memory. This design is still used in most computers produced today.

A Von Neumann-based computer:

- Uses a single processor
- Uses one memory for both instructions and data.
- Executes programs following the fetch-decode-execute cycle

Components of Von-Neumann Model:

- Central Processing Unit
- Buses
- Memory Unit

Central Processing Unit

The part of the Computer that performs the bulk of data processing operations is called the Central Processing Unit and is referred to as the CPU.

The Central Processing Unit can also be defined as an electric circuit responsible for executing the instructions of a computer program.

The CPU performs a variety of functions dictated by the type of instructions that are incorporated in the computer.

The major components of CPU are Arithmetic and Logic Unit (ALU), Control Unit (CU) and a variety of registers.

Arithmetic and Logic Unit (ALU)

The Arithmetic and Logic Unit (ALU) performs the required micro-operations for executing the instructions. In simple words, ALU allows arithmetic (add, subtract, etc.) and logic (AND, OR, NOT, etc.) operations to be carried out.

Control Unit

The Control Unit of a computer system controls the operations of components like ALU, memory and input/output devices.

The Control Unit consists of a program counter that contains the address of the instructions to be fetched and an instruction register into which instructions are fetched from memory for execution.

Registers

Registers refer to high-speed storage areas in the CPU. The data processed by the CPU are fetched from the registers.

Following is the list of registers that plays a crucial role in data processing.

29 A)

K-Map (Karnaugh Map)

In many digital circuits and practical problems we need to find expression with minimum variables. We can minimize Boolean expressions of 3, 4 variables very easily using K-map without using any Boolean algebra theorems. K-map can take two forms Sum of Product (SOP) and Product of Sum (POS) according to the need of problem. K-map is table like representation but it gives more information than TRUTH TABLE. We fill grid of K-map with 0's and 1's then solve it by making groups.

Steps to solve expression using K-map-

1. Select K-map according to the number of variables.
2. Identify minterms or maxterms as given in problem.
3. For SOP put 1's in blocks of K-map respective to the minterms (0's elsewhere).

4. For POS put 0's in blocks of K-map respective to the maxterms(1's elsewhere).
5. Make rectangular groups containing total terms in power of two like 2,4,8 ..(except 1) and try to cover as many elements as you can in one group.
6. From the groups made in step 5 find the product terms and sum them up for SOP form.

30. HTML Formatting Elements

In the previous chapter, you learned about the HTML **style attribute**.

HTML also defines special **elements** for defining text with a special **meaning**.

HTML uses elements like `` and `<i>` for formatting output, like **bold** or *italic* text.

Formatting elements were designed to display special types of text:

- `` - Bold text
- `` - Important text
- `<i>` - Italic text
- `` - Emphasized text
- `<mark>` - Marked text
- `<small>` - Small text
- `` - Deleted text
- `<ins>` - Inserted text
- `<sub>` - Subscript text
- `<sup>` - Superscript text

List `` and ``

Media tags

The media attribute specifies what media/device the linked document is optimized for.

This attribute is used to specify that the target URL is designed for special devices (like iPhone) , speech or print media.

This attribute can accept several values.

Elements

Attribute

<u><a></u>	<u>media</u>
<u><area></u>	<u>media</u>
<u><link></u>	<u>media</u>
<u><source></u>	<u>media</u>
<u><style></u>	<u>media</u>

31. What is CSS?

- **CSS** stands for **Cascading Style Sheets**
- CSS describes **how HTML elements are to be displayed on screen, paper, or in other media**
- CSS **saves a lot of work**. It can control the layout of multiple web pages all at once
- External stylesheets are stored in **CSS files**

id

The syntax for declaring a CSS ID is the same as for classes, except that instead of using a dot, you use a hash (#).

```
#id-name { property:value; }
```

Styling Links

Links can be styled with any CSS property (e.g. color, font-family, background, etc.).

32. a) eXtensible HyperText Markup Language (XHTML) is part of the family of XML markup languages. It mirrors or extends versions of the widely

- Properties*
- animation
 - align
 - backface
 - background
 - border
 - bottom
 - color
 - font
 - filter
 - display
 - margin
 - text
- visible

used HyperText Markup Language (HTML), the language in which Web pages are formulated.

While HTML, prior to HTML5, was defined as an application of Standard Generalized Markup Language (SGML), a flexible markup language framework, XHTML is an application of XML, a more restrictive subset of SGML. XHTML documents are well-formed and may therefore be parsed using standard XML parsers, unlike HTML, which requires a lenient HTML-specific parser.^[1]

The **World Wide Web Consortium (W3C)** is the main international standards organization for the World Wide Web (abbreviated WWW or W3).

Founded and currently led by Tim Berners-Lee, the consortium is made up of member organizations which maintain full-time staff for the purpose of working together in the development of standards for the World Wide Web. As of 29 May 2019, the World Wide Web Consortium (W3C) has 444 members

b)

What is SMPS

SMPS or switched mode power supply is an electronics device that is used to convert AC to DC, AC to AC, DC to DC and DC to AC voltages. The circuit consists of transformer, rectifier, voltage regulator and a filter. The input supply is turned On and Off by MOSFETs and outputs a high efficiency, regulated voltage. The SMPS used in computers is of AC to DC type supply.

A **motherboard** (sometimes alternatively known as the **mainboard**, **main circuit board**, **system board**, **baseboard**, **planar board** or **logic board**,^[1] or colloquially, a **mobo**) is the main printed circuit board (PCB) found in general purpose computers and other expandable systems. It holds and allows communication between many of the crucial electronic components of a system, such as the central processing unit (CPU) and memory, and provides connectors for other peripherals. Unlike a backplane, a motherboard usually contains significant sub-systems such as the central processor, the chipset's input/output and memory controllers, interface connectors, and other components integrated for general purpose use and applications.

c)

Laws of Boolean algebra

The basic Laws of Boolean Algebra can be stated as follows:

- Commutative Law states that the interchanging of the order of operands in a Boolean equation does not change its result. For example:
 1. OR operator $\rightarrow A + B = B + A$
 2. AND operator $\rightarrow A * B = B * A$

- o Associative Law of multiplication states that the AND operation are done on two or more than two variables. For example:

$$A * (B * C) = (A * B) * C$$

- o Distributive Law states that the multiplication of two variables and adding the result with a variable will result in the same value as multiplication of addition of the variable with individual variables.

For example:

$$A + BC = (A + B) (A + C).$$

- o Annulment law:

$$A \cdot 0 = 0$$

$$A + 1 = 1$$

- o Identity law:

$$A \cdot 1 = A$$

$$A + 0 = A$$

- o Idempotent law:

$$A + A = A$$

$$A \cdot A = A$$

- o Complement law:

$$A + A' = 1$$

$$A \cdot A' = 0$$

- o Double negation law:

$$((A)')' = A$$

- o Absorption law:

$$A \cdot (A+B) = A$$

$$A + AB = A$$

$$734 \cdot 24$$

$$\begin{array}{r} 8 \overline{) 734} \\ \underline{800} \\ 34 \\ \underline{24} \\ 10 \\ \underline{8} \\ 20 \\ \underline{16} \\ 4 \end{array}$$

$$0.24 \times 8 = 1.92$$

$$0.92 \times 8 = 7.36$$

$$0.36 \times 8 = 2.88$$

$$0.68 \times 8 = 5.44$$

Laws of Boolean algebra

The basic laws of Boolean algebra can be stated as follows:

Commutative Law states that the interchanging of the order of operands in a Boolean operation does not change its result. For example:

$$1. \text{ OR operator } - A + B = B + A$$

$$2. \text{ AND operator } - A * B = B * A$$